Docket No. 310301-1050

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Edward Hendry BAKER, et al.
Title:	VIDEO DATA COMMUNICATION SYSTEM FOR MOBILE OBJECTS ON A RACE TRACK
Appl. No.:	09/623,439
Filing Date:	12/4/2000
Examiner:	Lee, Y. Young
Art Unit:	2621
Confirmation No.:	3867

APPEAL BRIEF UNDER 37 C.F.R. § 41.37

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Commissioner for Patents
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Sir:

The following is the Appellants' Appeal Brief under the provisions of 37 C.F.R. 41.37. A credit card payment that includes the Appeal Brief fee of $540.00 is included with the filing of Appellants' Appeal Brief.

1. Real Party in Interest

The real party in interest is Formula One Administration Limited, which is the assignee of record.

2. Related Appeals and Interferences

None.

3. Status of Claims

The present appeal is directed to claims 1-12 and 18-20, whereby claims 13-17 have been previously canceled. A copy of the presently pending claims under rejection are attached herein in the Claims Appendix (Section 8).

4. Status of Amendments

No amendments are being filed concurrently with this Appeal Brief.

5. Summary of the Claimed Subject Matter

The presently claimed invention is directed to a system and method for providing continuous reception of a video signal from an on board camera in a mobile object (e.g., a race car) as it moves along a race track.

In independent claim 1, each of first and second receivers receive a transmitted video signal output from the mobile object on a carrier frequency. Separately, a position signal is generated by a position detector, which is indicative of a position of the mobile object. The position signal is generated using indications other than the received video signal and the carrier that is transmitted by the mobile object. A controller selects one of the two received video signals based on the position signal and output it. The controller is configured to then output the second of the first and second receivers in response to change in the position as the mobile object moves along the race track.

Independent method claim 12 is directed to a method of communicating the video signal including the steps of generating a video signal with an on board video camera on a mobile object, transmitting the video signal, receiving the video signal at first and second receivers, determining the mobile object location using indications other than the signal parameters of the received video signal or its carrier, and selecting the first or second receiver for output at a stationary location based on the determined mobile object location.

In more detail, independent claim 1 recites:

A system for providing continuous reception of a video signal from an on board camera in a mobile object as it moves around a race track comprising:

an on board video camera on the mobile object for generating a video signal and a transmitter provided on the mobile object for transmitting said video signal from the mobile object on a first carrier frequency;

first and second receivers that each receive the transmitted video signal on said first carrier frequency, said first and second receivers having at least partially overlapping detection areas and being located at spaced apart locations about the race track;

a position detector for generating a position signal indicative of the position of said mobile object using indications other than parameters of the received video signal and carrier as the mobile object moves around the race track; and

a controller located other than in the mobile object for selecting and outputting the video signal received by the first of the first and second receivers in response to the position signal and for thereafter selecting and outputting the video signal received by the second of the first and second receivers in response to change in the position signal as the mobile object moves around the track.

Support for a "*system for providing continuous reception of a video signal from an on board camera in a mobile object as it moves around a race track*" may be found, for example, on page 6, lines 15-18 and Figure 1 of the drawings.

Support for "*an on board video camera on the mobile object for generating a video signal and a transmitter provided on the mobile object for transmitting said video signal from the mobile object on a first carrier frequency*" may be found, for example, on page 9, line 22 to page 10, line 5 and on page 11, lines 17-19 of the specification, and Figure 1 of the drawings.

Support for "*first and second receivers that each receive the transmitted video signal on said first carrier frequency, said first and second receivers having at least partially overlapping detection areas and being located at spaced apart locations about the race*

track" may be found, for example, on page 6, lines 15-18, page 7, lines 8-14 and page 17, lines 11-19 of the specification, and in Figures 2, 6A and 6B of the drawings.

Support for "*a position detector for generating a position signal indicative of the position of said mobile object using indications other than parameters of the received video signal and carrier as the mobile object moves around the race track*" may be found, for example, on page 9, lines 5-17 of the specification, and in Figure 4 of the drawings.

Support for "*a controller located other than in the mobile object for selecting and outputting the video signal received by the first of the first and second receivers in response to the position signal and for thereafter selecting and outputting the video signal received by the second of the first and second receivers in response to change in the position signal as the mobile object moves around the track*" may be found, for example, on page 11, line 14 to page 12, line 11, and in Figures 4 and 5 of the drawings.

Independent claim 12 recites:

A method of communicating a video signal between a mobile object moving on a race track and a stationary location, the method comprising the steps of:

generating a video signal with an on board video camera mounted on the mobile object;

transmitting the video signal on a first carrier frequency from a transmitter on the mobile object;

providing at least first and second receivers at spaced apart locations about the race track that each receive the video signal from the transmitter on the mobile object on said first carrier frequency; and

determining the location of the moving mobile object on the race track using indications other than signal parameters of the received video signal or its carrier; and

selecting with a controller located other than in the mobile object the video signal received by one of said first and second receivers for output at said stationary location, on the basis of the location of said mobile object as determined in the determining step.

Support for a "*method of communicating a video signal between a mobile object moving on a race track and a stationary location*" may be found, for example, on page 6, lines 15-18 and Figure 1 of the drawings.

Support for "*generating a video signal with an on board video camera mounted on the mobile object*" may be found, for example, on page 9, line 22 to page 10, line 5 and on page 11, lines 17-19 of the specification, and Figure 1 of the drawings.

Support for "*transmitting the video signal on a first carrier frequency from a transmitter on the mobile object*" may be found, for example, on page 9, line 22 to page 10, line 5 and on page 11, lines 17-19 of the specification, and Figure 1 of the drawings.

Support for "*providing at least first and second receivers at spaced apart locations about the race track that each receive the video signal from the transmitter on the mobile object on said first carrier frequency*" may be found, for example, on page 6, lines 15-18, page 7, lines 8-14 and page 17, lines 11-19 of the specification, and in Figures 2, 5, 6A and 6B of the drawings.

Support for "*determining the location of the moving mobile object on the race track using indications other than signal parameters of the received video signal or its carrier*" may be found, for example, on page 9, lines 5-17 of the specification, and in Figure 4 of the drawings.

Support for "*selecting with a controller located other than in the mobile object the video signal received by one of said first and second receivers for output at said stationary location, on the basis of the location of said mobile object as determined in the determining step*" may be found, for example, on page 11, line 14 to page 12, line 11, and in Figures 4 and 5 of the drawings.

Dependent claim 7 depends from claim 1, and recites:

wherein said position detector determines the position of said mobile object based on information provided by a timing system of the race track.

Support for "*wherein said position detector determines the position of said mobile object based on information provided by a timing system of the race track*" may be found, for example, on page 9, lines 8-9 of the specification.

Dependent claim 10 depends indirectly from claim 1, and recites:

the network comprises first and second signal lines;

the output of each of the receivers is selectively connectable, under the control of said controller, to the first, the second or neither of said signal lines such that, in use, the output from one of said receivers is connected to the first signal line and the output of a second one of the receivers is connected to the second signal line; and

said controller outputs the signal on the signal line connected to the receiver receiving the selected video signal.

Support for "*the network comprises first and second signal lines*" may be found, for example, on page 11, lines 4-7 of the specification.

Support for "*the output of each of the receivers is selectively connectable, under the control of said controller, to the first, the second or neither of said signal lines such that, in use, the output from one of said receivers is connected to the first signal line and the output of a second one of the receivers is connected to the second signal line*" may be found, for example, on page 11, line 7 to page 12, line 7 of the specification, and in Figures 4-5 of the drawings.

Support for "*said controller outputs the signal on the signal line connected to the receiver receiving the selected video signal*" may be found, for example, on page 12, lines 7-11 of the specification, and in Figure 5 of the drawings.

6. Grounds of Rejection to be Reviewed on Appeal

The ground of rejection to be reviewed on appeal is whether the Examiner correctly rejected claims 1-12 and 18-20 under 35 U.S.C. § 103(a) as being unpatentable over either Japanese Patent Application JP 60-246190 to Yasuyuki Suzuki et al. ("Yasuyuki") in view of Applicants' Admitted Prior Art ("AAPA").

7. Argument

I.A. Claims 1-6, 8, 9, 12 and 18-20:

Independent claim 1 is directed to a system for providing continuous reception of a video signal from on an board camera in a mobile object (e.g., a race car) as it moves along a race track. Each of first and second receivers receive a transmitted video signal output from the mobile object on a carrier frequency. Separately, the system includes a position detector that generates a position signal indicative of a position of the mobile object. The position signal is generated using indications other than the received video signal and the carrier that is transmitted by the mobile object.

A controller selects one of the two received video signals based on the position signal and output it. The controller is configured to then output the second of the first and second receivers in response to change in the position as the mobile object moves along the race track.

Independent method claim 12 is directed to a method of communicating the video signal including the steps of generating a video signal with an on board video camera on a mobile object, transmitting the video signal, receiving the video signal at first and second receivers, determining the mobile object location using indications other than the signal parameters of the received video signal or its carrier, and selecting the first or second receiver for output at a stationary location based on the determined mobile object location.

In Applicants' reply of April 8, 2008 to a final Office Action dated December 13, 2007, Applicants included an English language translation of Yasuyuki as an Attachment to that reply That same English language translation is included in the EVIDENCE section of this Appeal Brief. Yasuyuki discloses a system for transmitting television pictures from a mobile car to a central location via microwave beams to a plurality of fixed antennas. The video signal from the mobile car can be picked up by two of the fixed antennas, which provide the received signal to the central location. At the central location, errors in a synchronizing signal and a burst signal are detected, and one of the two received signals is selected on the basis of the detected errors. In other words, Yasuyuki depends on signal quality of the received signals at a base station to determine which signal to use.

Yasuyuki describes a scheme that corresponds to a conventional approach for receiving video from a moving car via plural receivers, in which when the same signal is received at two or more receivers, qualities of the received signal are considered in order to determine which one of received signals (e.g., the signal received by receiver #1 or the signal received by receiver #2) is to be used. In the second paragraph on page 4 of the attached English language translation of Yasuyuki, which refers to Figure 2 of that reference, it states that "there are limits to forecasting and switching when, as described here, there are rapid changes in the micro signal receiver function over short distances and it is clear that the present invention can alleviate the workload of the switch operator and prevent major issues." Thus, it is clear that Yasuyuki teaches away from the presently claimed invention by suggesting that the solution to errors in manual location-based switching is via automated switching based on signal quality. In contrast, independent claim 1 recites that a controller selects and outputs the video signal received by one of the first and second receivers in response to the position signal indicative of the mobile object position and in response to change in the position signal as the mobile object moves around a race track. The position signal is obtained using indications other than the parameters of the received video signal. Analogously, the "determining the location" and the "selecting" steps of independent method claim 12 are not met by Yasuyuki. The present application also discusses the problems with simply relying on signal strength to determine which signal to choose. *See* present specification at pages 8-9. In sum, the present application directly recognizes the conventional approach of the kind in Yasuyuki and discloses an improvement that avoids the problem of such a conventional approach.

The final Office Action points to base station 7 as corresponding to the position detector that generates the position signal, and that a controller selects one of two signals based on the asserted position detector. Final Office Action at page 4. The final Office Action is incorrect. Nothing in Yasuyuki teaches or suggests that the base station 7 generates a position signal, much less using indications other than the parameters of the received signals. Rather the base station 7 in Yasuyuki makes a decision to switch between receives on the basis of the received signal strength, and so Yasuyuki's base station 7 does not correspond in any way, shape or form to the claimed position detector. The received signal

strength at each receiver depends on a number of factors. In more detail, many transitory phenomena, such as a large truck moving close to a transmitter or receiver, a rain shower or a local source of interference (e.g., cell phone), could affect the received signal strength at either or both of the receivers of Yasuyuki in such a way as to cause the base station 7 to switch receivers based on those "environmental" factors.

Again, the base station 7 of Yasuyuki does not correspond to a position detector that generates a signal indicative of a position of a transmitter. Nor would it have been obvious to have substituted the base station 7 of Yasuyuki with a position detector based on a race track timing system or GPS that works separately from the received video signals, since these are not equivalent elements (that is, the base station performs much different operations than a position detector).

Given that the base station 7 is not a position detector, this further undermines the assertions made at the bottom of page 3 and continuing on page 4 of the final Office Action concerning why one skilled in the art would utilize the well known position detection system of AAPA in Yasuyuki's base station 7. Even further, to the person of ordinary skill in the art, such supposed additional features added to Yasuyuki's base station 7 provide no appreciable benefits to Yasuyuki's base station, but instead provide additional costs and complexities to Yasuyuki's base station 7, since Yasuyuki's base station 7 uses a totally different criteria, that being received signal strength, to decide which of two received signals to output.

Put in another way, given that Yasuyuki uses signal quality of the received video signals to determine which signal to choose, Yasuyuki clearly does not use the position signal to select the appropriate video signal, which position signal is based on indications other than the signal parameters of the received video signal, as recited in independent claims 1 and 12, whereby AAPA does not rectify this deficiency of Yasuyuki.

The final Office Action relies heavily on the assertion that determining position using GPS is well known. However, the final Office Action fails to provide evidence from the prior art that would cause the person of ordinary skill in the art to have changed Yasyuki's structure: (a) to determine position separately from the received video signals, and (b) a controller that uses position information in order to select from two received video signals. Indeed, Yasuyuki has no recognition to even use a position signal of any kind to select from

among two received video signals. No evidentiary rationale is provided, and instead only hindsight is provided, as to why the person of ordinary skill in the art would change Yasuyuki in the noted significant ways to reach the present claimed invention of claims 1 and 12.

I.B. Claim 7:

With respect to dependent claim 7, the arguments provided above in Section 1.A. for its base claim 1 apply. Additionally, that claim recites that the position detector determines the position of the mobile object based on information provided by a timing system of the race track. In its rejection of claim 7, the final Office Action dated November 14, 2008 does not appear to address these specific features recited in claim 7.

It is noted that the final Office Action dated December 13, 2007 asserts that "the position detector 7 determines the position of the mobile object 6 based on information provided by a timing system of the race track (e.g. between μ_1 and μ_2)." Appellants respectfully disagree with this assertion raised in the previous final Office Action. In more detail, base station 7 of Yasuyuki receives signals from first to fifth microwave signal receives 1 to 5, and determines, based on signal quality of those received signals, which one of those is to be output as a video signal. As clearly described on page 4 of the attached English language translation of Yasuyuki (included in the EVIDENCE Appendix to this Appeal Brief), frequency μ_1 is the frequency transmitted by the first microwave signal receiver 1, and μ_2 is the frequency transmitted by the second microwave signal receiver 2, whereby this has nothing at all to do with a timing system of a race track as in claim 7. In a reply to that previous final Office Action dated December 13, 2007, the Examiner was respectfully requested to show where Yasuyuki actually discloses a timing system providing the noted information, but such a showing was not provided in any subsequent office or advisory actions.

Accordingly, since AAPA does not rectify the above-identified deficiencies of Yasuyuki, dependent claim 7 patentably distinguishes over the cited art of record for these additional reasons, beyond the reasons given above for its base claim 1.

<u>I.C. Claims 10 and 11:</u>

With respect to dependent claims 10 and 11, the arguments provided above in Section 1.A. for their base claim 1 apply. Additionally, dependent claim 10 recites features of a network comprising first and second signal lines. Yasuyuki does not teach or suggest such features of a network, whereby AAPA does not rectify these deficiencies of Yasuyuki. In more detail, the solid and dashed lines shown in Figure 2 of Yasuyuki et al. represent microwave signal paths, whereby each of the receivers 2 and 3 is connected to base station 7 by its own respective signal line. Thus, the receiver 2 of Yasuyuki et al. cannot be selectively connectable to either a first signal line, a second signal line, or neither of the first or second signal lines, as explicitly recited in claim 10 (the same is true for receiver 1 of Yasuyuki et al.). For example, see the signal line connectivity shown in Figure 5 of the drawings of the present application, whereby such "selectable" connectivity is not disclosed, taught or suggested by Yasuyuki et al. The final Office Action does not specifically identify where the features of claim 10 can be found in Yasuyuki.

Accordingly, since AAPA does not rectify the above-identified deficiencies of Yasuyuki, dependent claim 10, as well as dependent claim 11 that depends from claim 11, patentably distinguish over the cited art of record for these additional reasons, beyond the reasons given above for their base claim 1.

Conclusion

In view of above, Appellants respectfully solicit the Honorable Board of Patent Appeals and Interferences to reverse the rejections of the pending claims and pass this application on to allowance.

Respectfully submitted,

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8. CLAIMS APPENDIX

LIST OF THE CLAIMS ON APPEAL (WITH STATUS IDENTIFIERS)

1. (Previously Presented) A system for providing continuous reception of a video signal from an on board camera in a mobile object as it moves around a race track comprising:

an on board video camera on the mobile object for generating a video signal and a transmitter provided on the mobile object for transmitting said video signal from the mobile object on a first carrier frequency;

first and second receivers that each receive the transmitted video signal on said first carrier frequency, said first and second receivers having at least partially overlapping detection areas and being located at spaced apart locations about the race track;

a position detector for generating a position signal indicative of the position of said mobile object using indications other than parameters of the received video signal and carrier as the mobile object moves around the race track; and

a controller located other than in the mobile object for selecting and outputting the video signal received by the first of the first and second receivers in response to the position signal and for thereafter selecting and outputting the video signal received by the second of the first and second receivers in response to change in the position signal as the mobile object moves around the track.

2. (Previously Presented) A system according to claim 1 wherein the controller changes from selecting and outputting the signal received by said first receiver to selecting and outputting the signal received by said second receiver when the mobile object is at a predetermined distance from said first receiver.

3. (Original) A system according to claim 1 wherein the first and second receivers have helical antennas.

4. (Previously Presented) A system according to claim 3 wherein said helical antennas are arranged about the race track at a height in the range of from 1.5 to 3 metres relative to the ground.

5. (Previously Presented) A system according to claim 1 wherein the transmitter can be controlled to transmit selectively on a plurality of frequencies.

6. (Original) A system according to claim 5 wherein the transmission frequency of the transmitter is controlled by the controller.

7. (Previously Presented) A system according to claim 1 wherein said position detector determines the position of said mobile object based on information provided by a timing system of the race track.

8. (Previously Presented) A system according to claim 1 additionally comprising a second on board video camera on a second mobile object and a second transmitter provided on said second mobile object, each transmitter simultaneously transmitting video signals to said receivers.

9. (Previously Presented) A system according to claim 1 wherein the receivers and the controller are interconnected by a network.

10. (Previously Presented) A system according to claim 9 wherein:

the network comprises first and second signal lines;

the output of each of the receivers is selectively connectable, under the control of said controller, to the first, the second or neither of said signal lines such that, in use, the output from one of said receivers is connected to the first signal line and the output of a second one of the receivers is connected to the second signal line; and

said controller outputs the signal on the signal line connected to the receiver receiving the selected video signal.

11. (Previously Presented) A system according to claim 10 wherein the controller includes a further output connected to the signal line not connected to the receiver receiving the selected video signal.

12. (Previously Presented) A method of communicating a video signal between a mobile object moving on a race track and a stationary location, the method comprising the steps of:

generating a video signal with an on board video camera mounted on the mobile object;

transmitting the video signal on a first carrier frequency from a transmitter on the mobile object;

providing at least first and second receivers at spaced apart locations about the race track that each receive the video signal from the transmitter on the mobile object on said first carrier frequency; and

determining the location of the moving mobile object on the race track using indications other than signal parameters of the received video signal or its carrier; and

selecting with a controller located other than in the mobile object the video signal received by one of said first and second receivers for output at said stationary location, on the basis of the location of said mobile object as determined in the determining step.

Claims 13-17 (Canceled)

18. (Previously Presented) A system according to claim 1 further comprising additional receivers located at spaced apart locations about the race track for receiving the transmitted video signal, the placement and number of receivers sufficient to ensure that there are at least partially overlapping reception areas between adjacent receivers and that there is never a break in the reception of the transmitted video signal as the mobile object moves completely around the race track.

19. (Previously Presented) A system according to claim 1 wherein the mobile object is a race car.

20. (Previously Presented) A method according to claim 12 wherein the mobile object is a race car.

9. EVIDENCE APPENDIX

English-language translation of JP 60-246190 to Yasuyuki et al.

10. RELATED PROCEEDINGS APPENDIX

None.

(19) Japanese Patent Office (JP)

(12) LAID OPEN PATENT GAZETTE (A)

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(54) Title of the invention: Video signal switching system

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Specification

1. Title of the invention:
Video signal switching system

2. Scope of the Claim:
Video signal switching system, characterised in that it is provided with a synchronising converter that synchronises two video signals to a base synchronisation; a switch that selects one of the two video signals that have been synchronised by the abovementioned synchronising converter; and a switch control circuit that detects abnormality in the burst signal and/or the synchronised signal of the abovementioned two video signals and creates a switch control signal for the abovementioned switch.

3. Detailed description of the invention:
The present invention relates to a video signal switching system for mobile outside broadcasting television.
In programmes where the television signal from a television camera in a mobile outside broadcasting vehicle is broadcast live (as in outside broadcasts of marathons, for example), the television signal is sent to the station by microwaves; however, the transmitted microwaves are disrupted by obstacles, and it is often difficult to broadcast consistently good footage. Consequently, the method adopted involves not one but an increased number of signal receiver points that receive the microwaves from the outside broadcasting vehicle, and undisrupted footage is selected by an operator and transmitted; but in the case of outside broadcasts of city marathons, for example, there are great number of obstacles, such as pedestrian bridges and road signs, and there are also other vehicles as obstacles, received signal misses and the like, and so the quality of the received signal image varies frequently with this method. At such times, manual switching is often inadequate, and the disrupted footage is often broadcast without further modification.

The aim of the present invention is therefore to provide a video signal switching system for mobile outside broadcasting that can, by the automatic selection of undisrupted images, broadcast images that are more stable than those of the prior art.

The present invention provides a video signal switching system for mobile outside broadcasting, comprising a first switch that selects two of the signals from a plurality of signal receiver points provided along the outside broadcast route; a write-to-memory means provided with a synchronising converter (frame synchroniser) that receives the two signals selected by the first switch, where this synchronising converter converts the two inputs to respective digital signals and writes them into a memory; a memory-readout means that reads the memory with standard timing; a second switch that selects two digital signals read from the memory; a converter that converts the digital signals selected by the second switch to analog signals; and a detection circuit that detects disruption of the images of the two inputs to the synchronising converter and creates a switch control signal for the second switch.

In the present invention, only the first switch, that selects two frame synchroniser inputs, is manually controlled, in response to movement of the mobile outside broadcasting vehicle; the switching in order to avoid frequent image disruption due to obstacles such as pedestrian bridges and road signs occurs automatically inside the frame synchroniser and so there are no mis-timings, the switch operator workload is reduced, and it is possible to transmit consistently stable footage. Furthermore, detection of signal disruption proceeds in the write-in side of the frame synchroniser and the correct image selection switching proceeds in the read-out side of the frame synchroniser and so by using the delay time between frame synchroniser input and output it is possible to select and switch to the correct video before the disrupted image is output.

The present invention is described in detail below with reference to figures which depict an embodiment. Figure 1 shows an example of a switch in an outside broadcast of a marathon, where the first to the fifth microwave signal receivers 1 to

5 are provided at appropriate intervals between the starting point/finishing line S and the turn-back point M and mobile vehicle 6 transmits at various different frequencies facing the nearest two microwave signal receivers. In Figure 1, frequency μ_1 is transmitted to first microwave signal receiver 1, and frequency μ_2 is transmitted to second microwave signal receiver 2. In the figure, the microwave frequency is given in brackets. The received signal output of the first to fifth microwave signal receivers is sent to base station 7.

Figure 2 is a detailed diagram of an outside broadcast shot in Figure 1. When mobile vehicle 6 is at point A, the obstruction afforded by U-shaped pedestrian bridge 8 results in a weak carrier electric field being delivered to third microwave signal receiver 3, and so there is disruption. However, second microwave signal receiver 2 can receive a signal correctly. Conversely, when mobile vehicle 6 has progressed slightly to point B, third signal microwave signal receiver 3 can receive a signal correctly, but the electric field to second microwave signal receiver 2 is weak and there is disruption. With the present invention, the switching at point A and point B occurs automatically and there is no disruption of the final output either at point A or point B. Moreover, there are limits to forecasting and switching when, as described here, there are rapid changes in the micro signal receiver function over short distances and it is clear that the present invention can alleviate the workload of the switch operator and prevent major misses.

The design comprising the frame synchroniser in base station 7 that receives the signals of first to fifth microwave signal receivers 1 to 5 is described below with reference to Figure 3. Switch 9 receives video signals v_1 to v_5 that have been taken up by the first to fifth microwave signal receivers, and two near mobile outside broadcasting vehicles 6 (Figure 1) are selected and sent to lines R_1, R_2.

Inside frame synchroniser 10, writing addresses are generated in response to the respective inputs corresponding to the 2 inputs and written into the memory. Therefore, low pass filter 11 (11'), A/D converter 12 (12'), writing clock generator circuit 13 (13'), synchroniser separator circuit 14 (14'), frame memory 15 (15'), writing address generator circuit 16 (16') and address selection circuit 17 (17') are

positioned in the two lines, respectively. Clock generator circuit 18, which creates and reads a readout clock from standard input R_f, and readout address generator circuit 19 are positioned on the read-out side. As a result, lines R_1, R_2 frame memory output is in phase vertically, horizontally and in terms of colour. The above-mentioned construction and operation are the same as those of an ordinary frame synchroniser and are therefore not described in detail. One of the two digital video signals read from frame memory 15, 15' is selected by switch 20 and output as a video signal via D/A converter 21 and low pass filter 22.

The control of switch 20 is described below. Synchronised signal disruption detection circuit 23 (23') and burst signal disruption detection circuit 24 (24') are provided in the two output lines R_1, R_2, respectively, and disruption of the signals output from the output lines is detected. Synchronised signal disruption detection circuit 23 (23') ascertains whether or not there is a synchronised signal, ascertains whether or not the phase of a previously detected synchronised signal is synchronised in phase with the base and outputs a detection signal in the event of abnormality. Burst signal disruption detection circuit 24 (24') detects the level of the burst signal, and if it is below a prescribed level, outputs a detection signal as an abnormality. Switch control circuit 25 which controls the switching of switch 20 receives four detection signals from synchronised signal disruption detection circuit 23, 23' and burst signal disruption detection circuit 24, 24' and controls switch 20 according to the logic of the four signals. Figure 4 is a logic table for control by switch control circuit 25. In this logic table, priority is high for synchronisation disruption due to burst level disruption, and so there is a good response to obstacles in practice.

The line R_1, R_2 signals switched according to the logic table in Figure 4 are originally the same signals and they have been brought in phase in terms of colour by the synchroniser function so it is possible to switch without any shock if they are the same in the 2 lines on the video level only and it is possible to select those that are always correct or nearly correct. The main features of the entire base station described above are that criteria are established using only the video signals and so there is no need to switch anything but the main line video, and that any

transmission path may be introduced between the micro signal receiver and the switch (SW_1). Furthermore, in the present invention, the switching occurs at the site of the digital signal that is read from the memory and this is clearly better than the situation where it is returned to analogue and then switched both in terms of managing the level and phase and because it avoids duplication of the D/A converter and the like.

It should be noted that mobile outside broadcasting has been described as an embodiment of the present invention but the present invention can, of course, also be employed for fixed lines and the like where obstacles are likely to arise.

4. Brief description of the Figures:

Figure 1 is a diagram showing the switching during the outside broadcast of a marathon; Figure 2 is a detailed diagram of an outside broadcast shot in Figure 1; Figure 3 is a diagram showing the design of an embodiment of the present invention; and Figure 4 is a logic table for switching control in Figure 3.

Agent: Patent Attorney Susumu UCHIHARA

Figure 1

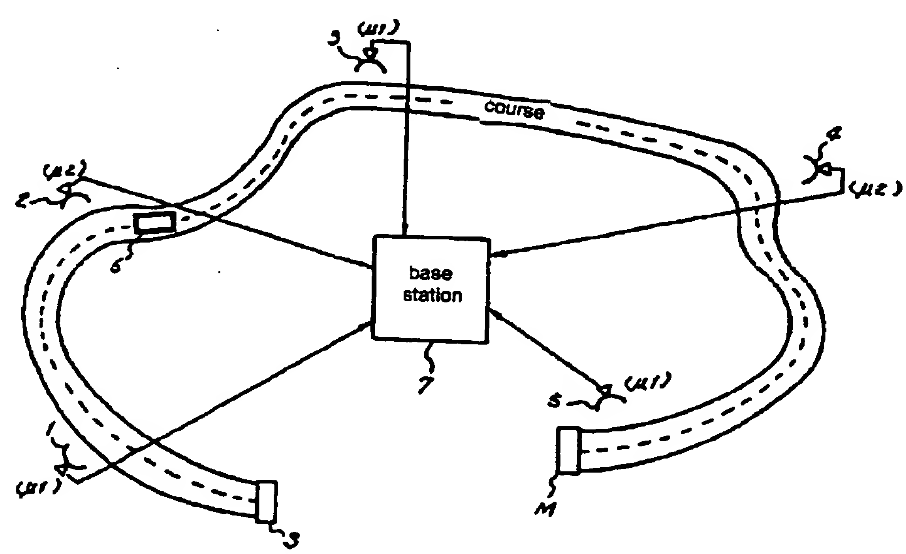

Figure 2

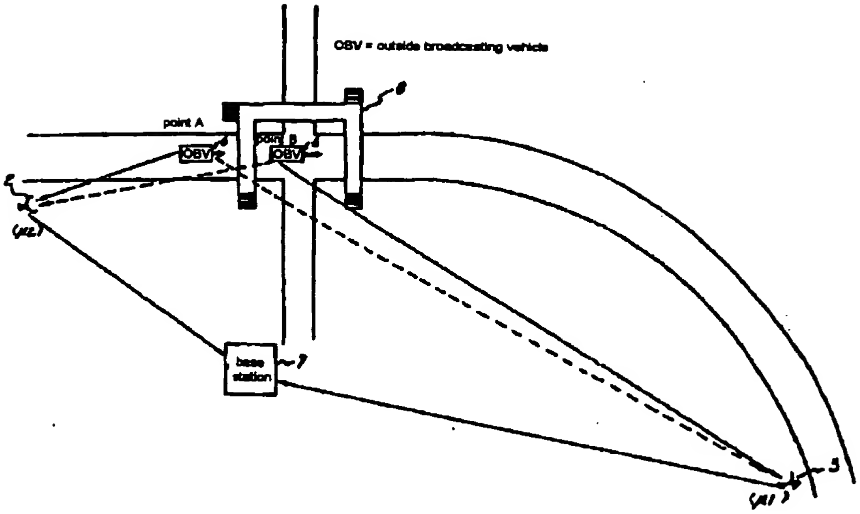
OBV = outside broadcasting vehicle
point A
point B
OBV
OBV
base station
7
5

Figure 3

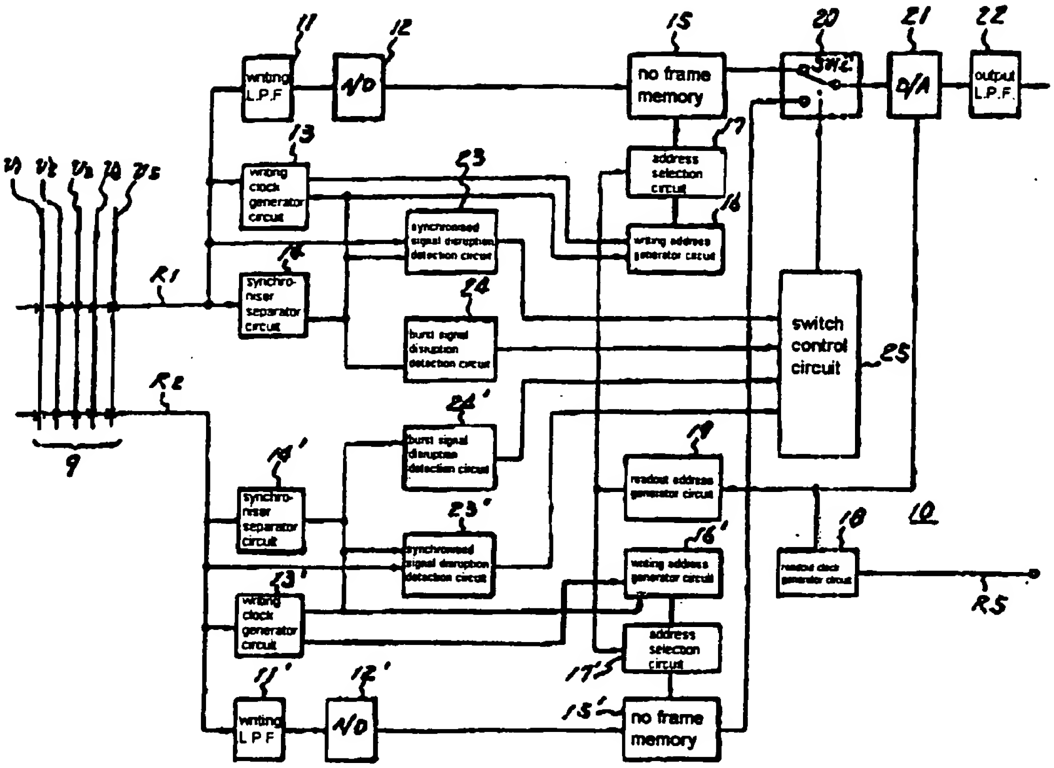
writing L.P.F
A/D
no frame memory
D/A
output L.P.F.
address selection circuit
writing clock generator circuit
synchro-niser separator circuit
burst signal disruption detection circuit
switch control circuit
readout address generator circuit
writing address generator circuit
no frame memory
9
10
R1
R2
R5
11
12
13
15
17
20
21
22
23
24
25
19
18

Figure 4

Line R_1		Line R_2		Result
Synchronised signal disruption detection circuit 23	Burst signal disruption detection circuit 24	Synchronised signal disruption detection circuit 23'	Burst signal disruption detection circuit 24'	
Correct	Correct	Correct	Correct	Route maintained
Correct	Correct	Correct	Disrupted	Line R_1 selected
Correct	Correct	Disrupted	Correct	Line R_1 selected
Correct	Correct	Disrupted	Disrupted	Line R_1 selected
Correct	Disrupted	Correct	Correct	Line R_2 selected
Correct	Disrupted	Correct	Disrupted	Route maintained
Correct	Disrupted	Disrupted	Correct	Line R_1 selected
Correct	Disrupted	Disrupted	Disrupted	Line R_1 selected
Disrupted	Correct	Correct	Correct	Line R_2 selected
Disrupted	Correct	Correct	Disrupted	Line R_2 selected
Disrupted	Correct	Disrupted	Correct	Route maintained
Disrupted	Correct	Disrupted	Disrupted	Route maintained
Disrupted	Disrupted	Correct	Correct	Line R_2 selected
Disrupted	Disrupted	Correct	Disrupted	Line R_2 selected
Disrupted	Disrupted	Disrupted	Correct	Route maintained
Disrupted	Disrupted	Disrupted	Disrupted	Route maintained